VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the issuance of the VPDES permit listed below. This permit action is the initial issuance of a permit for a facility that has not yet been constructed. This permit is being processed as a major, municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. The discharge results from the operation of a publicly owned sewage treatment plant. SIC Code: 4952.

1. **Facility Name:** Rohoic Creek WWTP
Address: Dinwiddie County Water Authority
23008 Airpark Drive
Petersburg, VA 23803

Location Intersection of Rawlings Road and Cox Road

2. **Permit Number** VA0092274
Existing Permit Expiration Date: Not Applicable – New Facility

3. **Owner Contact**
Name: Mr. Robert Wilson
Title: Executive Director, Dinwiddie County Water Authority
Telephone No: 804-861-0999

4. **Application Complete Date:** June 17, 2008 - Receipt of surrogate pH and Temp data
Permit Drafted By: Jaime Bauer, Piedmont Regional Office
Reviewed By: Emilee Carpenter **Date:** March 18, 2008
Reviewed By: Ray Jenkins **Date:** April 28, 2008

Public Notice Dates: First Publication Date: July 16, 2008
Second Publication Date: July 23, 2008
Public Comment Period: July 16, 2008 to August 15, 2008

5. **SCC Certification Verification as required by Section 62.1-44.15:3 of the State Water Control Law:** Applies only to privately owned treatment works. The proposed facility is municipally owned.

6. **Financial Assurance/Closure as required by 9 VAC 25-650-10:** Applies only to privately owned treatment works and does not apply to design flows equal to or greater than 40,000 gallon per day. The proposed facility is municipally owned and is designed to have a greater flow than the financial assurance threshold.

7. **Receiving Stream Name:** Hatcher Run
Basin: Chowan and Dismal Swamp Basin
Subbasin: Chowan
Section: 2b
Class: III
Special Standards: None
River Mile: 5AHRA008.36

7-Day, 10-Year Low Flows:	0.01 MGD	0.01 cfs
1-Day, 10-Year Low Flows:	0.01 MGD	0.01 cfs
30-Day, 5-Year Low Flows:	0.05 MGD	0.08 cfs

30-Day, 10-Year Low Flows:	0.02 MGD	0.03 cfs
7-Day, 10-Year High Flows:	1.0 MGD	1.6 cfs
1-Day, 10-Year High Flows:	0.75 MGD	1.2 cfs
30-Day, 10-Year High Flows:	2.1 MGD	3.2 cfs
1-Q30 Flows	0.00 MGD	0.00 cfs
Harmonic Mean Flow:	Undeterminable	
Tidal:	No	
On 303(d) List:	No	

See Flow Frequency Memo dated November 20, 2007 (Attachment 1)

8. **Operator License Requirements**: Class II
(9 VAC 25-790-300)

9. **Reliability Class**: Class II
(9 VAC 25-790-70)

10. **Permit Characterization:**

___ Private ___ Federal ___ State **X** POTW ___ PVOTW

___ Possible Interstate Effect ___ Interim Limits in Other Document

11. **Table 1: Wastewater Flow and Treatment**

Outfall Number	Discharge Source	Treatment	Flow Design Capacity
001	Proposed primarily residential with some commercial and industrial received	Sequencing Batch Reactor (2) , Equalization Basin, Filtration, UV Disinfection, Re-Aeration Sludge: Extended – Aerobic Digester	4.0 MGD

(See Attachment 2 for facility diagram)

12. **Sewage Sludge Use or Disposal:**
Dewatered sludge solids will be trucked to Atlantic Waste Disposal Landfill in Sussex County for disposal.

13. **Discharge Location Description*:***
The facility will discharge to Hatcher Run directly downstream of Jordan Lake Dam under the Route 1 bridge. See Attachment 3 for the Sutherland Topo Map (Number 070A).

14. **Material Storage:**
This is a proposed facility. Material storage information is not available at this time.

15. **Ambient Water Quality Information:**
Ambient water quality data is compiled from station 5AHRA010.94. The monitoring station was selected upon the advice of J. Palmore, Senior Environmental Planner, DEQ Piedmont Regional Office. See Attachment 4 for monitoring data.

This facility discharges to a stream segment on the 2006 Water Quality Assessment 305(b)/303(d) list. The receiving stream has historically had low dissolved oxygen due to natural swamp like conditions. The stream segment has historically had low dissolved oxygen because of

swamp like conditions. During the draft 2008 305(b)/303(d) assessment, PRO staff performed a Natural Conditions Assessment. Upon approval of the 2008 assessment, it will be classified as 4C waters until the WQS can be revised to reclassify the stream as Class VII – swamp water. Further discussion is included in the Flow Frequency and Stream Sanitation Memorandums (Attachment 1).

16. **Antidegradation Review & Comments:** **Tier 1 X Tier 2 _____ Tier 3 _____**

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with a Tier determination. The Hatcher Run at the proposed discharge point has been historically deemed as a Tier 1 water body and antidegradation has not applied. During the 2006 305(b)/303(d) Water Quality Assessment, Hatcher Run was assessed as fully supporting the recreation and wildlife uses, not supporting aquatic life uses, and not assessed for fish consumption use (Attachment 1).

17. **Site Inspection:** On January 28, 2008, Jennifer Palmore and Kelley Harris for the PRO Water Planning unit visited the location of the proposed plant. The visit was conducted in conjunction with the stream assessment used in Jennifer Palmore's Stream Sanitation Analysis. During the site visit, Ms. Palmore noted that the stream is backwatered by a low beaver dam over which water was flowing. See Attachment 1 for more information on the site visit.

18. **Effluent Screening & Limitation Development**:

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS*					
		MONTHLY AVG		WEEKLY AVG		MIN	MAX
Flow (MGD)	NA	NL		NA		NA	NL
pH (s.u)	1, 2	NA		NA		6.0	9.0
E. coli (geometric mean)	1	126		NA		NA	NA
Total Suspended Solids (TSS)	2	30 mg/L	450 kg/d	45 mg/L	680 kg/d	NA	NA
$cBOD_5$	1	9.0 mg/L	140 kg/d	14 mg/L	210 kg/d	NA	NA
TKN	1	3.0 mg/L	45 kg/d	4.5 mg/L	68 kg/d	NA	NA
Dissolved Oxygen (DO)	1	NA		NA		5.0	NA
Whole Effluent Toxicity (WET) Test: NOAEC *Ceriodaphnia dubia*[3]	3	NA		NA		NL	NA
Whole Effluent Toxicity (WET) Test: NOAEC *Pimephales promelas*[3]	3	NA		NA		NL	NA

Whole Effluent Toxicity (WET) Test: NOEC *Ceriodaphnia dubia*[3]	3	NA	NA	NA	NL
Whole Effluent Toxicity (WET) Test: NOEC *Pimephales promelas*[3]	3	NA	NA	NA	NL

**All limitations except E. coli, are expressed in terms of two significant figures.*

1. Water Quality Based Limit
2. Technology Based Limit
3. WET limit

a. Basis for Limits

1. Water Quality-Based Limits:

pH: A pH range of 6.0 – 9.0 Standard Units is assigned to all Class III waters per the Virginia Water Quality Standards, 9 VAC 25-260-50. The pH range is also defined as part of secondary treatment in 40 CFR 133.

E. coli: The disinfection policy in 9 VAC 25-260-170 B. in the Water Quality Standards requires that all discharges in to freshwater meet a geometric mean of 126 count/100 ml. In accordance with GM 03-2007, where effluent sampling is performed more than once per month, only the geometric mean bacteria standard applies.

$cBOD_5$: Based on stream sanitation modeling. See Attachment 1.

Total Kjehldahl Nitrogen (TKN): Based on stream sanitation modeling. See Attachment 1.

Dissolved Oxygen (DO): Based on stream sanitation modeling. See Attachment 1.

Ammonia: A limitation evaluation was conducted for ammonia using the MSTRANTI Excel Spreadsheet to calculate acute and chronic waste load allocations (WLAs). The WLAs are entered in to the STATS.exe computer application to determine the need for a permit limitation and calculate the limitation. Acute and chronic WLAs on an annual basis of 1.5 mg/L and 1.6 mg/L, respectively, were entered into STATS.exe with a quantification level of 0.2 mg/L. The facility requested tiered ammonia limitations based on winter conditions. Acute and chronic WLAs for winter conditions were calculated to be 1.5 mg/L and 1.9 mg/L, respectively, and entered into STATS.exe The procedures established in Virginia DEQ Guidance Memo 00-2011 recommend inputting a single datum point of 9.0 mg/L into the program; however, ammonia concentrations should never be greater than 3.0 mg/L because TKN for the proposed discharge is limited to 3.0 mg/L and TKN is approximately 40-60% ammonia. The evaluation resulted in a recommended permit weekly and monthly average limitation of 3.2 mg/L annually with a winter tier ammonia limitation of 3.8 mg/L. Since TKN is limited to 3.0 mg/L, no ammonia limitation is necessary. TKN will protect the ammonia standard. (See Attachment 4)

TRC for Alternate Disinfection (not included in the table above): Part I. Section B. of the permit contains provisions for alternate disinfection in the form of chlorination. A limitation evaluation was conducted for TRC. The chronic and acute WLAs were calculated using the MSTRANTI Excel Spreadsheet. The WLA for TRC were calculated as 0.019 mg/L for acute and 0.011 mg/L for chronic. Following GM 00-2011, since the WLAa was less than 4.0 mg/L, the calculated WLA were entered into STAT.exe. to determine the need for a permit limitation and calculate the limitation. A quantification level of 0.001 mg/L and a data point of 20 mg/L were used as recommended by GM 00-2011. The evaluation resulted in a recommended weekly average limitation of 0.0096 mg/L and a monthly average limitation 0.0080 mg/L.

These limitations become effective if the permittee implements an alternate disinfection process. (See Attachment 4)

2. Federal Effluent Guidelines (Technology Based Limits)

   TSS: Municipal facilities are required to meet secondary treatment requirements. As promulgated in 40 CFR 133, secondary treatment for TSS will meet limits of 30 mg/L for a monthly average and 45 mg/L for a weekly average.

3. Whole Effluent Toxicity Monitoring
   Monitoring for acute and chronic toxicity is required for all municipal discharges greater than 1 MGD. Monitoring is listed on the Part I.A. page. Additional monitoring requirements are included in Part I.D. As per an email from D. DeBiasi on March 5, 2008, NOEAC endpoints should no longer be expressed in terms of TU_a to avoid confusion with LC_{50} results. NOEC results should continue to be reported in TU_c.

19. **Basis for Sludge Use & Disposal Requirements**
    A sludge management plan for the pump and haul disposal of sludge from this facility is required according to 9 VAC 25-31-100 P, 200 B.2, 420-720.

20. **Antibacksliding Statement**: Not Applicable – This is a proposed facility.

21. **Compliance Schedules**: Not Applicable

22. **Special Conditions:**

    B.1 **Alternative Disinfection - Total Residual Chlorine Effluent Limitations and Monitoring Requirements**
    Rationale: This special condition is only applicable if chlorine disinfection is used in place of UV disinfection. These limitations and monitoring are required by the Water Quality Standards, 9 VAC 25-260-170 – Bacteria. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. This ensures proper operation of chlorination equipment to maintain adequate disinfection.

    C.1. 95% Capacity Reopener
    Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 2 for all POTW and PVOTW permits

    C.2. Indirect Dischargers
    Rationale Required by VPDES Permit Regulation, 9 VAC 25-31-200 B 1 and 2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

    C.3. CTC, CTO Requirement
    Rationale: Required by Code of Virginia ?62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790..

    C.4. O&M Manual Requirement
    Rationale: Required by Code of Virginia ?62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190 E.

C.5. Materials Handling/Storage

Rationale: 9 VAC 25-31-50, Section A. prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia Section 62.1-44.16 and 62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

C.6. Licensed Operator Requirement

Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 C and the Code of Virginia § 54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.), require licensure of operators.

C.7. Reliability Class

Rationale: Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities.

C.8. Sludge Reopener

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-220 C.4 for all permits issued to treatment works treating domestic sewage.

C.9. TMDL Reopener

Rationale: Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act. This re-opener is included in all permits.

C.10. Water Quality Criteria Monitoring

Rationale: State Water Control Law 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit and Form 2A Sections B and D of the VPDES permit application.

C.11. Compliance Reporting

Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

C.12. Notification of Commencement of Discharge

Rationale: This condition is designed to clarify monitoring and reporting requirements before the commencement of discharge. Inclusion is pursuant to state-wide water permit manager consensus.

C.13. Sludge Use and Disposal

Rationale: VPDES Permit Regulation, 9 VAC 25-31-100 P; 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit

information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

C.14. Industrial Pretreatment Program/Significant Discharger Survey
Rationale: VPDES Permit Regulation, 9 VAC 25-31-730 through 900 and CFR part 403 require certain existing and new source of pollution to meet specified requirement.

D. Whole Effluent Toxicity Testing
Rationale: VPDES Permit Regulation, 9 VAC 25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act.

The permittee is being required to conduct quarterly acute and chronic toxicity tests for a period of three years or until expiration of this permit, which occurs first. Following quarterly testing if no toxicity problems are identified then testing shall be annual until expiration of the permit. Acute and chronic end points are established using WETLIM10_2005.xls As per an email from D. DeBiasi on March 5, 2008, NOEAC endpoints should no longer be expressed in terms of TU_a to avoid confusion with LC_{50} results. NOEC results should continue to be reported in TU_c.
(**Attachment 5**).

Part II, Conditions Applicable to All Permits
Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

23. **Changes to the Permit:** Not Applicable – This is a proposed facility.

24. **Variances/Alternate Limits or Conditions**: None

25. **Regulation of Users (9 VAC 25-31-280 B 9):**
Not Applicable - The proposed facility is municipally owned.

26. **Public Notice Information required by 9 VAC 25-31-280 B**:
All pertinent information is on file and may be inspected, and copied by contacting:

Ms. Jaime Bauer at:
Virginia DEQ Piedmont Regional Office
4949-A Cox Road
Glen Allen, VA 23060
Telephone No. (804) 527-5015
Email Address: jlbauer@deq.virginia.gov

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

27. **Additional Comments:**

Previous Board Action: None

Staff Comments:

- The facility is being built in anticipation of the Fort Lee expansion. It is proposed as a 4 MGD plant, however, the application indicates that it will start off treating 12774 residential locations and receive 51,000 gallons per day of industrial wastewater. Currently, South Central Wastewater Authority services the northeastern section of Dinwiddie County. This proposed treatment plant will allow Dinwiddie County to service those residential and industrial connections currently included in the contract with SCWA.

- This facility has not yet been constructed; therefore, the facility is not eligible for reduced monitoring at this time.

- In accordance with Section 62.1-44.15:4 D of the State Water Control Law, riparian landowners within a quarter mile upstream and downstream of the proposed discharge were notified in a letter dated February 1, 2008. There are five landowners which have been notified of the proposed discharge. Staff received a phone call from Ms. Judy King inquiring about the project. Staff agreed to share the draft permit and fact sheet with the landowner and answer any additional questions prior to issuance of the permit.

- In accordance with Section 62.1-44.15:4 D of the State Water Control Law, localities must be notified of proposed discharges at the time of application receipt. Notification was given to the Dinwiddie County Administrator, Kevin Massengill, on January 11, 2008.

- In accordance with GM 07-2007, screening for impacts to threatened and endangered species was conducted via the following agencies: Department of Game and Inland Fisheries (DGIF), Department of Conservation and Recreation (DCR), and United States Fish and Wildlife Service (USFWS). On the DGIF database no confirmed hits were found for federal or state threatened or endangered species within a two mile radius of the outfall. The DCR screening revealed documentation of the Chowanoke crayfish (*Orconectes virginiesis*) within the project vicinity; however, the species is not listed as threatened or endangered on the federal or state list. The permittee will be informed that the DCR recommends a survey be performed, however, there are no requirements legally or in the MOU between DCR and DEQ that for the permittee to perform the study for species of concern. In the USFWS screening no confirmed hits were found in Dinwiddie County, although, federally listed species were documented in adjacent counties. It is expected that proposed facility discharge will not pose a threat to those species in adjacent counties. See **Attachment 6** for screening results.

Public Comment: None

28. **303(d) Listed Segments (TMDL)**:

This facility discharges to a stream segment on the 2006 Water Quality Assessment 305(b)/303(d) list. The receiving stream has historically had low dissolved oxygen due to natural swamp like conditions. During the draft 2008 305(b)/303(d) assessment, PRO staff performed a Natural Conditions Assessment and the segment has been recommended for reclassification as swamp waters, Class VII. While it is currently considered impaired for DO and pH, a TMDL is not required because the impairment is caused by natural conditions. It will be classified as 4C waters until the Water Quality Standards are revised.

Summary of Attachments:

1. Flow Frequency Memo & Stream Sanitation Memo
2. Process Diagrams
3. Topo Map
4. Permit Limitation Development
   - MSRTANTI Data Source Table
   - STORET Data
   - MIX.exe
   - pH Data from Dinwiddie County Water Authority – Courthouse WTTP (VA0081779)
   - Temperature Data from South Central WWTP (VA0025437) - 2007
   - MSTRANTI.xls
   - STATS.exe
5. Whole Effluent Toxicity Analysis
6. Threatened & Endangered Species Evaluations